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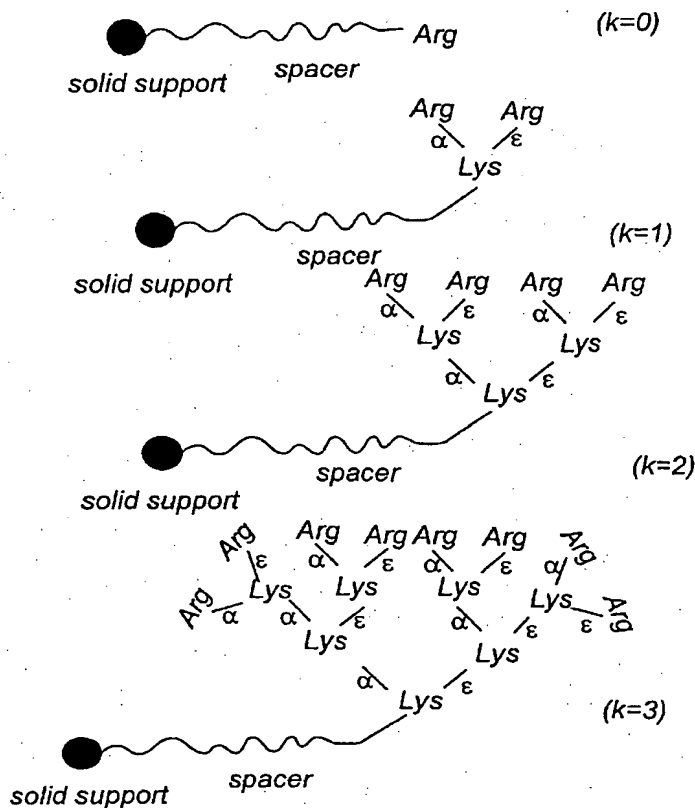
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IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,
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NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK,

[Continued on next page]

(54) Title: **POLYMER AFFINITY MATRIX, A METHOD FOR THE PRODUCTION AND USE THEREOF**



(57) Abstract: A polymer affinity matrix for the binding of one or more substances in a fluid or removing said substance (s) from the fluid and/or decreasing the amount or concentration thereof in said fluid with a view to preventing, eliminating or reducing undesired activation of components in said fluid is described, as well as a method for removing said substance(s) from the fluid and/or decreasing the amount or concentration thereof in said fluid, a method for the production of said matrix, use of said matrix and a kit comprising said matrix. The polymer affinity matrix comprises a solid support, a spacer and a ligand, containing arginine as a binding unit.



SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC,
VN, YU, ZA, ZM, ZW.

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*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE03/01166**Box I** Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 1-10, 12, 14-24, 26-37
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
See extra sheet
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☒ No protest accompanied the payment of additional search fees.

Box I

Claims 1 - 10, 12 - 24 and 26 - 37 cover an extremely large number of different polymer matrixes. The support needed, according to Art. 6. PCT, from the description, only exists for a few of those. In the current application the claims lack support in the description to such an extent that no meaningful search can be carried out. Further, claim 2 is unclear since it covers such a large number of variants.

Consequently, the search has been carried out based on those parts of the claims considered to be supported by the description, i.e. claims 11, 13, 25, 38 - 46 and parts of claims 5-10 and 14.

Box II

The International Searching Authority (ISA) considers that there are two groups of inventions covered by the claims indicated as follows:

1st group of inventions: Claims 11, 13 and 25 relate to a polymer affinity matrix comprising a solid support, a spacer and a ligand containing arginine as a binding unit.

2nd group of inventions: Claims 38 - 46 relate to the use of a polymer matrix for the production of a polymer affinity matrix for removal of one or more substances from a fluid wherein the spacer is selected from the group consisting of poly- or oligoethylene glycols.

The two groups of inventions are not linked such that they form a single general inventive concept, as required by Rules 13.1, 13.2 and 13.3 PCT, for the following reasons:

The special technical feature of claims 11, 13 and 25 is that arginine is used as a binding unit. The problem to be solved is to provide a specific and selective polymer affinity matrix for removing the amounts of undesired substances.

.../...

The special technical feature of claims 38 - 46 is the choice of solid support and spacer for the production of a polymer affinity matrix. The problem to be solved is to provide a polymer matrix that is easily wettable and swellable in both aqueous and organic solvents.

The common technical feature in claims 11, 13 and 25, and in claims 38 - 46 is a polymer affinity matrix comprising a solid support, a spacer and a ligand.

A polymer affinity matrix comprising a solid support, a spacer and a ligand is, however, well known in the art.

The groups of inventions according to claims 11, 13 and 25, and claims 38 - 46 do not involve one or more of the same or corresponding technical features within the meaning of PCT Rule 13.2

Neither do the groups of inventions relate to the same problem.

Consequently, neither the problem underlying the subjects of the two claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.

In conclusion, therefore, the two groups of claims are not linked by common or corresponding special technical features and define different inventions not linked by a single general inventive concept.

Further, the 1st group of inventions contains a number of separate inventions.

That is, the matrixes in claim 13 are not so linked as to form a single general inventive concept.

The formulas in claim 13 have been numbered in order to make the reasoning more clear. The matrix at the top of page 55 is number 1 and the matrixes following it are numbered consecutively (2, 3, 4 etc.).

The common technical feature of the matrixes in claim 13 is a ligand having a treelike structure including arginine. However, such matrixes are previously known from WO 0123413, cited in the international search report, in the separation of endotoxins. Further, it is well known in the art to immobilise amino acids and short peptides on a solid support by a spacer. Consequently, formula 1 is previously known on general bases.

.../...

Consequently, the inventions are not linked by a single general inventive concept. There are no technical features in the inventions which can be seen as common or corresponding special technical features within the meaning of Rule 13(2) PCT.

The matrixes have thus been grouped based on a common structure in the compound.

The unlinked inventions in claim 13 are the following:

1st group of inventions: Matrixes of the kind shown in formula 1, characterised by an arginine bound to a spacer and a solid support.

2nd group of inventions: Matrixes of the kind shown in formulas 2 - 4, 7 - 10 and 13, characterised by the tripeptide arg-lys-arg.

3rd group of inventions: Matrixes of the kind shown in formulas 5 - 6, characterised by the tetrapeptide arg-lys-lys-arg.

4th group of inventions: Matrixes of the kind shown in formulas 11 - 12, characterised by a cyclic structure including a disulfide bridge.

INTERNATIONAL SEARCH REPORT
Information on patent family members

26/07/03

International application No.

PCT/SE.03/01166

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